Applicants hereby affirm the election of Species B (claims 7-12).

Regarding the objections to the drawings and specification, the specification has been amended to substitute reference numeral "116" for reference numeral "106" (page 11, second paragraph), thereby correcting a typographical error in the originally filed specification. Also, the specification has been amended to correct the spelling of the word "fixed" on page 10, line 4.

Regarding the rejection of the claims under 35 USC 103(a), the Applicants respectfully submit that claim 7 is unobvious in view of the combination of references cited by the Examiner because claim 7 includes elements neither shown nor suggested by any of the cited references.

In the Office Action, the Examiner states the following with regard to Stimson '588:

> "Stimson discloses that the use of a variable capacitor connected in parallel to an antenna provides control of the impedance by finely tuning and or adjusting the variable capacitance of the capacitor (see col. 5, lines 15-43). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Schnieider et al. as to further comprise variable capacitors connected to the plurality of the antenna coils in order to control of the impedance by finely tuning and/or adjusting the variable capacitance of the capacitor."

(Office action mailed October 3, 2002, page 6, last paragraph). However, the portion of Stimson '588 cited by the Examiner relates to the impedance matching network used to match the combined impedances of coil 104 and network 306 to the impedance of RF generator 300. As stated in the portion of Stimson '588 cited by the Examiner (with emphasis added):

> "FIG. 3 is a schematic diagram illustrating one embodiment of an impedance-matching network 306 (excluding amplifier 396) having an input capacitor 310 with a variable capacitance C_{in}, a parallel match capacitor 312 with a variable capacitance C_{match} and a series match inductor 314 with an inductance L_{match} coupled through the vacuum chamber 102 to one end of the coil 104. A blocking capacitor 308 is coupled through the vacuum chamber 102 to the other end of the coil 104. The coil 104 has an associated inductance L_{coil} and a resistance R as shown by an equivalent resistor 316 and inductor 317. The input of the impedance-matching network 306 is coupled to the RF generator 300 through RF input 307.
>
> One function of the network 306 is to match the impedance of the coil 104 combined with that of the network 306 to the impedance of the RF generator 300 to minimize the reflection of RF energy back to the generator to maximize the coupling of RF energy from the coil 104 to the plasma in the chamber. Accordingly, for a particular coil

impedance L_{coil} of the coil 104, the values of the input capacitor 310, match capacitor 312, match inductor 314, and blocking capacitor 308, are chosen to provide a close match to the RF generator impedance which may be 50 ohms, for example. In a manner similar to that of prior impedance matching circuits, the impedances of the input capacitor C_{in} and match capacitor C_{match} may be finely tuned both prior to deposition and also during deposition to achieve and maintain a more precise match by adjusting the variable capacitances of the input capacitor 310 and match capacitor 312."

Thus, the variable capacitors discussed in Stimson '588 are used for purposes of impedance matching. Stimson '588 does not disclose the use of "a plurality of variable capacitor that are connected in parallel with the plurality of loop-shaped antennas in order to maintain a resonance state therebetween...", as recited in claim 7 of the present application. The present invention also employs an impedance matching network; however, this network is separate and distinct from elements of the antenna coil directed to maintaining resonance state in the loop-shaped antenna elements. Indeed, the Stimson '588 disclosure contains no discussion of achieving or maintaining resonance in loop-shaped antennas of an antenna coil. Similarly, there is no discussion of achieving or maintaining resonance in loop-shaped antennas of an antenna coil in any of the other cited references.

In view of the above, the Applicants respectfully submit that none of the cited references show or suggest the use of "a plurality of variable capacitor that are connected in parallel with the plurality of loop-shaped antennas in order to maintain a resonance state therebetween...", as recited in claim 7 of the present application. Thus, this element of claim 7 is unobvious in view of the combination of references cited by the Examiner. As claim 7 is believed to be patentable over the cited references, it is submitted that claims 8-12 are also patentable as they depend from claim 7.

In view of the above amendments and remarks, the Applicants respectfully submit that all rejections of record have been overcome. The Applicants respectfully request favorable reconsideration and allowance of the present application.

Respectfully submitted,

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ATTACHMENT TO AMENDMENT OF SERIAL NO. 09/881,908 CONTAINING MARKED-UP CHANGES TO SPEWCIFICATION AND CLAIMS

A. Version With Markings To Show Changes Made (Specification)

Page 10, lines 3-10:

Now, referring back to FIG. 1A, a heater 106, which applied heat to the atmosphere of the processing chamber 100, is [fixated] fixed over the resonance antenna coil 102. This heater 106 can also surround the sidewalls of the processing chamber 100. The resonance antenna coil 102 is also connected to a antenna heating device 108 that lets a heat exchange medium flow into the insides of the hollow-tube antenna coil 102 in order to maintain the resonance antenna coil 102 at a temperature of 50 to 100 Celsius (C°). The heat exchange medium from the antenna heating device 108 circulates through the hollow-tube antenna coil 102 and then is emitted through a exhaust pipe 109 to the outside.

Page 11, lines 8-15:

Since the process gases injected from the first and second gas pipes 110a and 110b are randomly distributed over a substrate 114, over the susceptor 112, and around the inner sidewalls of the processing chamber 100, the process efficiency of the process gases is lowered. Thus, the ring-shaped third gas pipe 110c is required around the susceptor 112 in order to increase the efficiency of the process gases that participate in a plasma process. Moreover, a lower RF power supply [106] 116 is connected to the susceptor 112 and supplies a high frequency power having a frequency of 2 to 4 MHz. So a plasma dry cleaning process can be performed in inner surfaces of the processing chamber 100.

B. Version With Markings To Show Changes Made (claims)

12. (Amended) The apparatus according to claim 7, wherein at least one gas pipe surrounds the means for fixing the substrate in a shape of a ring and the end of the [this] gas pipe

bends toward and over the means for fixing the substrate so as to inject the process gases upward.